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(54) [Title of the Invention] A Water-in-Oil Makeup Cosmetic

(57) [Summary]

[Structure]

A water-in-oil makeup cosmetic that contains the following components (A) through (E):

- (A) a semi-solid oil and/or liquid oil
- (B) a solid oil and/or oil gelling agent
- (C) a silicone composition in the form of a paste
- (D) water
- (E) cosmetic powder.

[Merits]

The water-in-oil makeup cosmetic pertaining to the present invention can maintain large amounts of water in a stable manner, is improved in terms of the drawbacks of oil-based cosmetics, such as stickiness, oily feel, and heavy spread, and has unprecedented application and cosmetic effects.

[Claims]

[Claim 1]

A water-in-oil makeup cosmetic, which is characterized by the fact that it contains the following components (A) through (E):

- (A) a semi solid oil and/or liquid oil
- (B) a solid oil and/or oil gelling agent
- (C) a silicone composition in the form of a paste
- (D) water
- (E) cosmetic powder.

[Detailed Description of the Invention]

[0001]

[Field of Industrial Utilization]

The present invention concerns a novel water-in-oil makeup cosmetic that has excellent stability over time, unprecedented application, and substantial cosmetic effects.

[0002]

[Prior Art]

Oil-based makeup cosmetics have excellent properties such as good adhesion strength on the skin, coating strength, cosmetic film water resistance, and the like, but also suffer from drawbacks such as stickiness, an oily feel, [overly] bright cosmetic film, and heavy spread. Methods adopted to remedy such drawbacks have included blending cosmetic components that have little oily feel and fashioning W/O emulsion types, but these too have resulted in unsatisfactory application and problems in terms of stability over time.

[0003]

The applicants earlier applied for a patent upon successfully obtaining an oil-based makeup cosmetic in which water could be blended in a stable manner and which had excellent application by dispersing a) a silicone gel composition consisting of a low viscosity silicone oil and a partially crosslinked organopolysiloxane polymer, b) an aqueous solution of an alkaline viscous-type acrylic water-soluble polymer gel containing glycerine, and c) a cosmetic powder, in an oil base (Japanese Laid-Open Patent Application 1-250306).

[0004]

There were still limits, however, to the amount of moisture that could be blended in a stable manner in the aforementioned method involving the use of a partially crosslinked organopolysiloxane polymer, and increases in the amount of moisture so as to enhance application resulted in problems in that this stability was difficult to maintain.

[0005]

[Problems Which the Invention is Intended to Solve]

The objective of the present invention is thus to obtain a water-in-oil makeup cosmetic in which large amounts of moisture can be blended in a stable manner and which has a refreshing feel upon application with no stickiness or oily sensation.

[0006]

[Means Used to Solve the Above-Mentioned Problems]

As a result of painstaking research undertaken in light of such circumstances, the inventors perfected the present invention upon discovering that a water-in-oil makeup cosmetic satisfying the aforementioned objectives could be obtained when a silicone composition in the form of a paste, obtained by introducing water and a low viscosity silicone oil into the structure of a novel silicone polymer described below, is dispersed in an oil base, and a solid oil and/or oil gelling agent is blended into the oil base.

[0007]

Specifically, the present invention is intended to offer a water-in-oil makeup cosmetic which is characterized by the fact that it contains the following components (A) through (E):

- (A) a semi solid oil and/or liquid oil
- (B) a solid oil and/or oil gelling agent
- (C) a silicone composition in the form of a paste
- (D) water
- (E) cosmetic powder.

[0008]

No particular restrictions are imposed on the semi solid oil and liquid oil used as component (A) in the present invention, provided that they are ordinarily used in cosmetic products. Examples which can be used include mineral oils, vegetable oils, animal oil, higher fatty acids, higher fatty acid esters, higher alcohols, and the like. Specific examples include liquid paraffin, squalane, castor oil, isopropyl myristate, isopropyl palmitate, lanolin, vaseline, olive oil, jojoba oil, macadamia nut oil, mink oil, turtle oil, almond oil, safflower oil, avocado oil, octyldodecyl myristate, cetyl 2-ethylhexanoate, triglyceride 2-ethylhexanoate and such glycerine fatty acid esters, diglyceryl isostearate and such diglycerine fatty acid esters, propylene glycol dicaprate and such propylene glycol fatty acid esters, dipentaerythritol fatty acid esters, oleic acid, oleyl alcohol, and the like.

[0009]

No particular restrictions are imposed on the solid oil of component (B), provided that it is a solid oil with a melting point of at least 40°C which is permissible for ordinary cosmetic use. Examples which can be used include hydrocarbons, wax, hardened oils, higher fatty acids, and higher alcohols. Specific examples include solid paraffin wax, ceresine wax, microcrystalline wax, carnauba wax, candelilla wax, bees wax, haze wax, spermaceti wax, polyethylene wax, hardened castor oil, rhodinic acid pentaerythritol ester, stearic acid, lauric acid, myristic acid, behenic acid, cetyl alcohol, stearyl alcohol, lauryl alcohol, and the like.

[0010]

Examples of oil gelling agents include aluminum stearate, magnesium stearate and such metallic soaps, sucrose palmitic acid esters, starch palmitic acid esters, Ophiopogon stearic acid esters and such polysaccharide fatty acid esters, dioctadecyl dimethyl ammonium salt modified montmorillonite, dihexadecyl dimethyl ammonium salt modified montmorillonite and other such organic modified clay minerals.

[0011]

The solid oil and oil gelling agent of component (B) may be used as the oil component, either independently or combined, mixed together with component (A). The amount of component (B) blended in the oil component should be 5 to 50 wt % (hereinafter indicated simply as %). The oil component consisting of the total of components (A) and (B) should be 5 to 40% of the total cosmetic composition, and preferably 15 to 30%. An oil component amount of less than 5% results in poor oil-based makeup, while an amount in excess of 40% results in an oily feel and poor application.

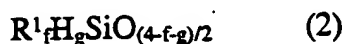
[0012]

In the present invention, component (C) is a novel silicone composition in the form of a paste and is obtained by kneading under shearing force 5 to 1000 weight parts low viscosity silicone oil and 100 weight parts silicone polymer that is obtained by the addition polymerization, in the presence or absence of 3 to 200 weight parts polyhydric alcohol and/or a low viscosity silicone oil (viscosity of no more than 100 cs at 25°C), of a combination of an organohydrodiene polysiloxane expressed by General Formula 1:



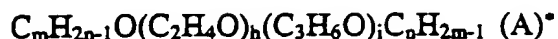
{where R^1 is the same or different C_1 through C_{18} unsubstituted or substituted alkyl group, aryl group, aralkyl group, or halogenated hydrocarbon radical; R^2 is a polyoxyalkylene group expressed by the general formula $C_n H_{2n} O (C_2 H_4 O)_d (C_3 H_6 O)_e R^3$ (where R^3 is a hydrogen atom or a C_1 through C_{10} saturated aliphatic hydrocarbon radical or $-(CO)-R^5$ (R^5 is a C_1 through C_5 saturated aliphatic hydrocarbon radical), d is an integer from 2 to 200, e is an integer from 0 to 200, $d+e$ is an integer from 3 to 200, and n is 2 to 6); $1.0 \leq a \leq 2.5$; $0.01 \leq b \leq 1.0$; and $0.001 \leq c \leq 1.0$ }

and/or an organohydrodiene polysiloxane expressed by General Formula 2:



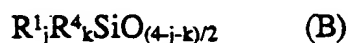
(where R^1 is the same as above; $1.0 \leq f \leq 3.0$; and $0.001 \leq g \leq 1.5$)

and a polyoxyalkylene expressed by General Formula A:



(where h is an integer from 2 to 200, i is an integer from 0 to 200, h+1 is an integer from 3 to 200, and m is 2 to 6)

and/or an organopolysiloxane expressed by General Formula B:



(where R¹ is the same as above; R⁴ is a C₂ through C₁₀ monovalent hydrocarbon radical having an aliphatic unsaturated group at the end; 1.0 ≤ j ≤ 3.0; and 0.001 ≤ k ≤ 1.5)

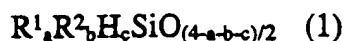
wherein the aforementioned components expressed by General Formula 1 and/or General Formula A are essential components in the composition totaling 100 weight parts.

[0013]

The silicone polymer constituting the silicone composition in the form of a paste pertaining to the present invention is obtained by the addition polymerization of an organohydrodiene polysiloxane and aliphatic unsaturated group-containing compound in the presence or absence of a polyhydric alcohol and/or silicone oil having a viscosity of no more than 100 cs at 25°C. The essential element is that either of the organohydrodiene polysiloxane or aliphatic unsaturated group-containing compound contains a polyoxyalkylene group.

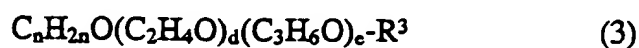
[0014]

Thus, the combination of an organohydrodiene polysiloxane and aliphatic unsaturated group-containing compound first involves an organohydrodiene polysiloxane which is expressed by General Formula 1



* Translator's note: Subscripts of last term are uncertain owing to poor copy legibility.

and which contains a polyoxyalkylene group, wherein R^1 is the same or different C_1 through C_{18} substituted or unsubstituted alkyl group, aryl group, aralkyl group, or halogenated hydrocarbon radical selected from a methyl group, ethyl group, propyl group, butyl group or such alkyl group, phenyl group, tolyl group or such aryl group, benzyl group, phenethyl group or such aralkyl group, or chloromethyl group or trifluoropropyl group in which part or all of the hydrogen atoms bonded with the carbon atoms of the aforementioned groups have been substituted with halogen atoms; R^2 is a polyoxyalkylene group which is expressed by General Formula 3



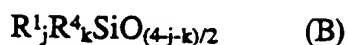
wherein R^3 is a hydrogen atom, or methyl group, ethyl group, propyl group, butyl group, pentyl group, hexyl group, heptyl group, octyl group and such C_1 through C_{10} saturated aliphatic hydrocarbon radicals, or is expressed by the formula $-(CO)-R^5$, where R^5 is a C_1 through C_5 saturated aliphatic hydrocarbon radical; d is an integer from 2 to 200; e is an integer from 0 to 200; $d+e$ is an integer from 3 to 200; and n is 2 to 6.

[0015]

When the value of a among the values for a , b , and c is less than 1.0, the polymer obtained is inadequately swollen in terms of the silicone oil, whereas with a value in excess of 2.5, moisture cannot be adequately dispersed in the paste composition obtained by kneading the resulting polymer with silicone oil under shearing force. The value of a must therefore be $1.0 \leq a \leq 2.5$, and preferably between 1.0 to 2.0. When the value of b is less than 0.001, the paste composition obtained by kneading the resulting polymer with silicone oil under shearing force cannot be adequately dispersed in water, whereas the polymer obtained with a value in excess of 1.0 has inadequate swelling properties in silicone oil. The value should thus be $0.001 \leq b \leq 1.0$, and preferably between 0.005 to 1.0. When the value of c is less than 0.001, it is difficult to form a three dimensional structure with the polymer obtained by addition polymerization, and the thickening properties with silicone oil are poor, whereas with a value in excess of 1.0, the three dimensional structure formed as a result of addition polymerization has too high a crosslinking density, and the silicone oil cannot be maintained in a stable manner. The value should thus be $0.001 \leq c \leq 1.0$, and preferably between 0.005 to 1.0.

[0016]

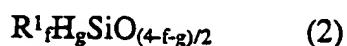
Materials combined with the organohydrodiene polysiloxane are expressed by General Formula B



where R^1 is the same as above, and R^4 is a C_2 through C_{10} monovalent hydrocarbon radical having an aliphatic unsaturated group such as a vinyl group or allyl group at the end. When the value for j is less than 1.0, the three dimensional structure formed by addition polymerization has too high a crosslinking density, and it is impossible to obtain a polymer in which silicone oil is maintained in a stable manner, whereas inadequate formation of a three dimensional structure results with a polymer that is obtained by addition polymerization with a value in excess of 3.0, and the thickening properties with silicone oil are poor. The value should therefore be $1.0 \leq j \leq 3.0$, and preferably between 1.0 to 2.5. It is difficult to form a three dimensional structure with the target polymer when the value for k is less than 0.001, and the silicone oil thickening properties are also poor, whereas the three dimensional structure formed by addition polymerization when the value is in excess of 1.5 has too high a crosslinking density, and it is not possible to obtain a polymer in which silicone oil can be maintained in a stable manner. In the organopolysiloxane containing an aliphatic unsaturated group, the value should therefore be $0.001 \leq k \leq 1.5$, and preferably between 0.005 to 1.0. The mixture of the organohydrodiene polysiloxane expressed by General Formula 1 and the organopolysiloxane expressed by General Formula B is hereinafter abbreviated as Mixture I.

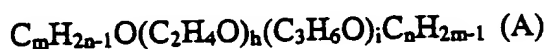
[0017]

The components involved in the combination of an organopolysiloxane and an aliphatic unsaturated group-containing compound are expressed, first, by General Formula 2



where R^1 is the same as before. The polymer obtained when the value for f is less than 1.0 results in inadequate swelling properties in silicone oil, whereas it is difficult to

form a three dimensional structure in the polymer obtained by addition polymerization when the value is in excess of 3.0, and the silicone oil thickening properties are poor. The value should therefore be $1.0 \leq f \leq 3.0$, and preferably between 1.0 to 2.5. It is difficult to form a three dimensional structure in the polymer obtained by addition polymerization when the value for g is less than 0.001, and the silicone oil thickening properties are poor, whereas when the value for g is greater than 1.5, the three dimensional structure formed by addition polymerization has too high a crosslinking density, and silicone oil is not maintained in a stable manner in the polymer thus obtained. The value of g in the organohydrodiene polysiloxane should therefore be $0.001 \leq g \leq 1.5$, and preferably between 0.005 to 1.0. The polyoxyalkylene is expressed by General Formula A



where h is 2 to 200, and preferably 5 to 100, and i is 0 to 200, and preferably 0 to 100. The value for h/i should be 1 or more, while m should be 2 to 6, and preferably 3 to 6, so that water can be adequately dispersed in the polymer thus obtained. The mixture of the aforementioned organohydrodiene polysiloxane and this polyoxyalkylene is hereinafter abbreviated as Mixture II.

[0018]

Examples of the low viscosity silicone oil with a viscosity of no more than 100 cs at 25°C which is used in the present invention in the addition polymerization of Mixture I or II include straight chain or branched methyl polysiloxane, methyl phenyl polysiloxane, ethyl polysiloxane, ethyl methyl polysiloxane, ethyl phenyl polysiloxane, octamethyl cyclotetrasiloxane, decamethyl cyclopentasiloxane and such cyclic dimethyl polysiloxanes. No particular restrictions are imposed, provided that the viscosity at 25°C is no more than 100 cs. Those with a viscosity of no more than 50 cs are preferred. The oils may be used individually or in combinations of two or more.

[0019]

Examples of polyhydric alcohols include ethylene glycol, 1,3-butylene glycol, propylene glycol, dipropylene glycol, glycerine, diglycerine, and the like. These may be used individually or in combinations of two or more.

[0020]

The amount of low viscosity silicone oil and/or polyhydric alcohol should be 3 to 200 weight parts per 100 weight parts of the aforementioned Mixture I or II. A polymer containing the low viscosity silicone oil and/or polyhydric alcohol is obtained by addition polymerization in the presence of either or both components. The product thus obtained has higher swelling properties in terms of silicone oil than that obtained by addition polymerization in the absence of said components, and superior thickening properties are also demonstrated.

[0021]

The Mixture I or II should undergo addition polymerization, for example, by reaction at room temperature or heated to 50 to 150°C in the presence of a well known rhodium compound catalyst or platinum compound catalyst such as chloroplatinic acid, alcohol modified chloroplatinic acid, or a chloroplatinic acid-vinyl siloxane complex. In this case, an organic solvent may be used as needed. Examples include methanol, ethanol, 2-propanol, butanol and such aliphatic alcohols, benzene, toluene, xylene and such aromatic hydrocarbons, n-pentane, n-hexane, cyclohexane and such aliphatic or alicyclic hydrocarbons, dichloromethane, chloroform, carbon tetrachloride, trichloroethane, trichloroethylene, fluorochlorohydrocarbons and such halogenated hydrocarbons, and the like.

[0022]

5 to 1000 weight parts, and preferably 20 to 500 weight parts, low viscosity silicone oil are dispersed and mixed in 100 weight parts of the silicone polymer thus obtained, and a uniform silicone composition in the form of a paste is obtained with a kneading treatment under shearing force. The silicone oil may be in either straight chain or branched form. Examples include methyl polysiloxane, methyl phenyl polysiloxane, ethyl polysiloxane, ethyl methyl polysiloxane, ethyl phenyl polysiloxane, octamethyl cyclotetrasiloxane, decamethyl cyclopentasiloxane and such cyclic dimethyl polysiloxanes. They may be used individually or in combinations of two or more.

[0023]

The silicone composition in the form of a paste should be blended in an amount of 5 to 60%, and preferably 15 to 40%, of the total cosmetic composition. When the amount is less than 5%, it is impossible to blend large amounts of the low viscosity

silicone oil or water in a stable manner, whereas an amount in excess of 60% results in poor application.

[0024]

Component (D), the water, should be blended in an amount of 5 to 80%, and preferably 10 to 60%, of the total cosmetic composition. Application using water cannot be obtained with an amount of water less than 5%, whereas an amount in excess of 80% results in poor stability over time.

[0025]

No particular restrictions are imposed on component (E), the cosmetic powder. Body pigments, inorganic white pigments, inorganic colored pigments, organic pigments, organic powders, pearl agents, and the like can be used. Specific examples include talc, kaolin, mica, magnesium carbonate, calcium carbonate, magnesium silicate, magnesium aluminum silicate, silica, titanium oxide, zinc oxide, red iron oxide, yellow iron oxide, black iron oxide, ultramarine, tar pigments, nylon powder, polyethylene powder, methyl methacrylate powder, styrene powder, polytetrafluoroethylene powder, silk powder, crystal cellulose, starch, micaceous titanium, iron oxide micaceous titanium, bismuth oxychloride, and the like.

[0026]

The cosmetic powder should be blended in an amount of 1 to 40%, and preferably 5 to 25%, of the total of the cosmetic composition. An amount in excess of 40% is undesirable because the powder properties become too pronounced.

[0027]

Commonly used aqueous components and oleaginous components, such as perfumes, fragrance preservatives, antiseptics, antioxidants, ultraviolet absorbents, surfactants, beautifying components, humectants, and the like can also be blended in addition to the aforementioned essential components into the makeup cosmetic pertaining to the present invention, provided that they do not compromise the effects of the invention.

[0028]

No particular restrictions are imposed on the method for manufacturing the makeup cosmetic pertaining to the present invention. Each component is blended in such a way that components (C) and (D) are uniformly dispersed in the oil base of components (A) and (B).

[0029]

The makeup cosmetic pertaining to the present invention can be used to make foundations, rouge, eye shadow, white powder, lipstick and the like. These can be fashioned in a variety of forms such as creams, solids, sticks, and the like.

[0030]

[Merits of the Invention]

The water-in-oil makeup cosmetic pertaining to the present invention can maintain large amounts of water in a stable manner, is improved in terms of the drawbacks of oil-based cosmetics, such as stickiness, oily feel, and heavy spread, and has unprecedented application and cosmetic effects.

[0031]

[Practical Examples]

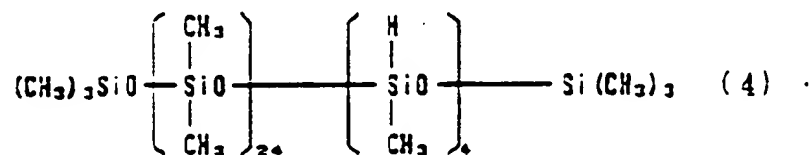
Reference examples for manufacturing the silicone composition in the form of a paste and practical embodiments of the present invention are described below.

[0032] (Reference Example 1)

(1) 68 g of organohydrodiene polysiloxane expressed by the average compositional formula (4)

[0033]

[Formula 4]

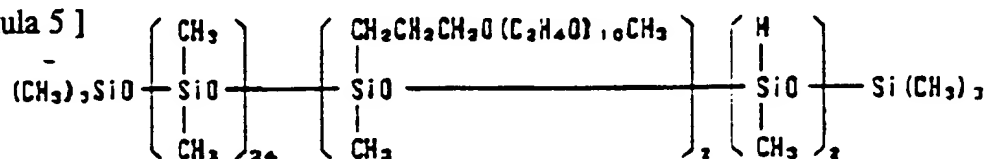


[0034]

100 g ethanol, 32 g of the polyoxyalkylene expressed by the average compositional formula $\text{CH}_2=\text{CHCH}_2\text{O}(\text{C}_2\text{H}_4\text{O})_{10}\text{CH}_3$, and 0.3 g of an ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor, the ingredients were agitated for two hours with the internal temperature maintained at 70 to 80°C, and the solvent was removed at reduced pressure to yield the organohydrodiene polysiloxane expressed by the average compositional formula (5):

[0035]

[Formula 5]



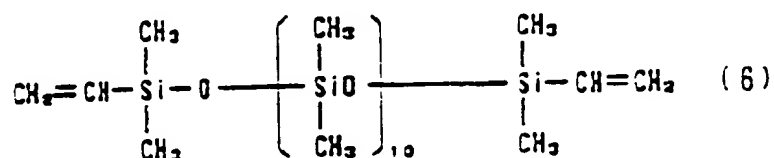
(5)

[0036]

(2) 100 g organohydrodiene polysiloxane obtained in the aforementioned section (1), 100 g ethanol, 28.9 g dimethyl polysiloxane hindered at the ends with dimethyl vinyl silyl expressed by average compositional formula (6):

[0037]

[Formula 6]



[0038]

and 0.3 g ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor, the ingredients were agitated for two hours with the internal temperature maintained at 70 to 80°C, and the solvent was removed at reduced pressure to yield an elastic polymer.

[0039]

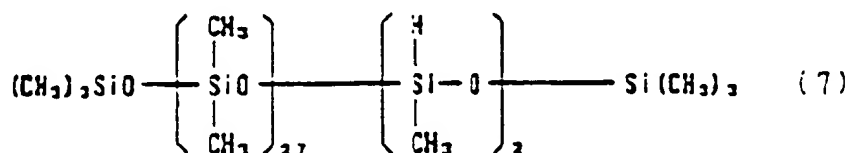
20 weight parts of this polymer and 80 weight parts dimethyl polysiloxane (viscosity 6 cs) were dispersed, mixed, and thoroughly kneaded under shearing force using a three roll mill to manufacture a silicone composition in the form of a uniform paste which had a viscosity of 32.000 cp and which was smooth to the touch.

[0040] (Reference Example 2)

100 g of organohydrodiene polysiloxane expressed by the average compositional formula (7)

[0041]

[Formula 7]



[0042]

62 g ethanol, 23.6 g of the polyoxyalkylene expressed by the average compositional formula $\text{CH}_2=\text{CHCH}_2\text{O}-(\text{C}_2\text{H}_4\text{O})_{10}-\text{CH}_2\text{CH}=\text{CH}_2$ (8), and 0.3 g of an ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor, the ingredients were agitated for two hours with the internal temperature maintained at 70 to 80°C, and the solvent was removed at reduced pressure to yield a granular polymer.

[0043]

33 weight parts of the polymer thus obtained and 67 weight parts of dimethyl polysiloxane (viscosity 6 cs) were dispersed, mixed, thoroughly kneaded under shearing force using a three roll mill, and allowed to swell to manufacture a silicone composition. The composition was a uniform paste which had a viscosity of 24,800 cp and was smooth to the touch.

[0044] (Reference Example 3)

100 g of the organohydrodiene polysiloxane expressed by the average compositional formula (4) obtained in section (1) of Reference Example 1, 75 g ethanol, 49.4 g of the polyoxyalkylene expressed by the average compositional formula (8) used in Reference Example 2, and 0.3 g ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor, the ingredients were agitated for two hours with the internal temperature maintained at 70 to 80°C, and the solvent was removed at reduced pressure to yield a granular polymer.

[0045]

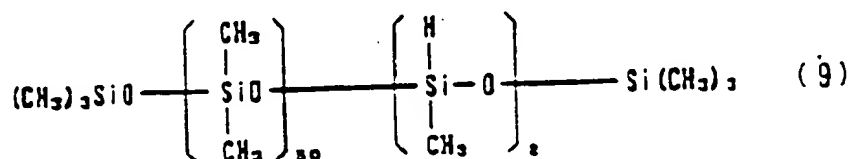
33 weight parts of this polymer and 67 weight parts of dimethyl polysiloxane (viscosity 6 cs) were dispersed, mixed, thoroughly kneaded under shearing force using a three roll mill, and allowed to swell to manufacture a silicone composition. This composition was a uniform paste which had a viscosity of 10,600 cp and was smooth to the touch.

[0046] (Reference Example 4)

100 g of organohydrodiene polysiloxane expressed by the average compositional formula (9)

[0047]

[Formula 9]



[0048]

57 g ethanol, 13.5 g of the polyoxyalkylene expressed by the average compositional formula (8) used in Reference Example 2, and 0.3 g of an ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor, the ingredients were agitated for two hours with the internal temperature maintained at 70 to 80°C, and the solvent was removed at reduced pressure to yield a granular polymer.

[0049]

20 weight parts of the polymer thus obtained and 80 weight parts of dimethyl polysiloxane (viscosity 6 cs) were dispersed, mixed, thoroughly kneaded under shearing force using a three roll mill, and allowed to swell to manufacture a silicone composition. The composition was a uniform paste which had a viscosity of 22,800 cp and was smooth to the touch.

[0050] (Reference Example 5)

100 g of the organohydrodiene polysiloxane expressed by the average compositional formula (7) obtained in Reference Example 2, 103 g ethanol, 23.6 g of the polyoxyalkylene expressed by the average compositional formula (8) used in Reference Example 2, 82.4 g dimethyl polysiloxane with a viscosity of 6 cs at 25°C, and 0.3 g ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor, the ingredients were agitated for two hours with the internal temperature maintained at 70 to 80°C, and the solvent was removed at reduced pressure to yield a silicone polymer.

[0051]

100 weight parts of this silicone polymer and 100 weight parts of dimethyl polysiloxane with a viscosity of 6 cs at 25°C were dispersed, mixed, thoroughly kneaded under shearing force using a three roll mill, and allowed to swell to manufacture a silicone composition. This composition was a uniform paste which had a viscosity of 82,800 cp and was smooth to the touch.

[0052] (Reference Example 6)

100 g of the organohydrodiene polysiloxane expressed by the average compositional formula (9) obtained in Reference Example 4, 95 g ethanol, 13.5 g of the polyoxyalkylene expressed by the average compositional formula (8) used in Reference Example 2, 75.7 g dimethyl polysiloxane with a viscosity of 5 cs at 25°C, and 0.3 g ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor and treated in the same manner as in Reference Example 5 to manufacture a polymer.

[0053]

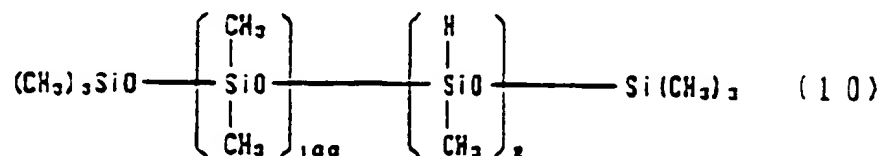
100 weight parts of this polymer and 200 weight parts of octamethyl cyclotetrasiloxane were dispersed, mixed, and then thoroughly kneaded under shearing force using a three roll mill to manufacture a swollen silicone composition. This composition was a uniform paste which had a viscosity of 44,000 cp and was smooth to the touch.

[0054] (Reference Example 7)

100 g of organohydrodiene polysiloxane expressed by the average compositional formula (10)

[0055]

[Formula 10]



[0056]

74 g ethanol, 18.5 g of the polyoxyalkylene expressed by the average compositional formula $\text{CH}_2=\text{CHCH}_2\text{O}(\text{C}_2\text{H}_4\text{O})_{30}\text{CH}_2\text{CH}=\text{CH}_2$ (11) used in Reference Example 2, 29.6 g dimethyl polysiloxane with a viscosity of 6 cs at 25°C, and 0.3 g of an ethanol

solution containing 3 wt % chloroplatinic acid were introduced into a reactor and treated in the same manner as in Reference Example 5 to manufacture a polymer.

[0057]

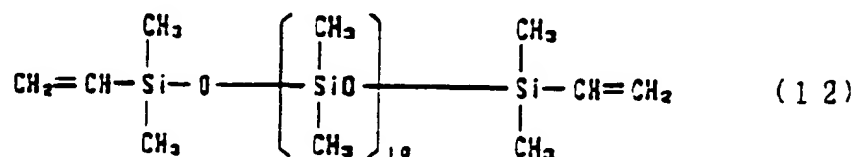
100 weight parts of this polymer and 200 weight parts phenyl tris(trimethylsiloxy) silane were dispersed, mixed, and then thoroughly kneaded under shearing force using a three roll mill to manufacture a swollen silicone composition. This was a uniform paste composition which had a viscosity of 25,000 cp and was smooth to the touch.

[0058] (Reference Example 8)

100 g of the organohydrodiene polysiloxane expressed by average compositional formula (5) obtained in section (1) of Reference Example 1, 72 g ethanol, 28.9 g dimethyl polysiloxane hindered at the ends with dimethyl vinyl silyl expressed by average compositional formula (12):

[0059]

[Formula 12]



[0060]

14.3 g dimethyl polysiloxane with a viscosity of 30 cs at 25°C, and 0.3 g ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor and treated in the same manner as in Reference Example 5 to manufacture a polymer.

[0061]

22.2 weight parts of this polymer and 77.8 weight parts dimethyl polysiloxane with a viscosity of 6 cs at 25°C were then dispersed, mixed, and then thoroughly kneaded under shearing force using a three roll mill to manufacture a silicone composition. This was a uniform paste composition which had a viscosity of 48,000 cp and was smooth to the touch.

[0062] (Reference Example 9)

100 g of the organohydrodiene polysiloxane expressed by the average compositional formula (7) obtained in Reference Example 2, 103 g ethanol, 23.6 g of the polyoxyalkylene expressed by the average compositional formula (8) used in Reference Example 2, 82.4 g 1,3-butylene glycol, and 0.3 g ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor, the ingredients were agitated for two hours with the internal temperature maintained at 70 to 80°C, and the solvent was removed at reduced pressure to yield a silicone polymer.

[0063]

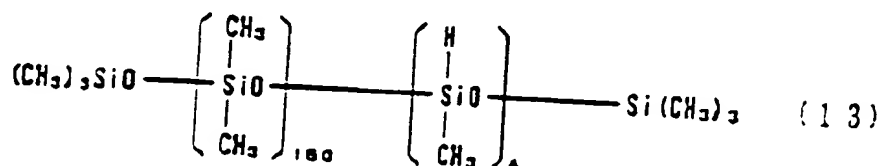
100 weight parts of this silicone polymer and 100 weight parts of dimethyl polysiloxane with a viscosity of 50 cs at 25°C were then dispersed, mixed, thoroughly kneaded under shearing force using a three roll mill, and allowed to swell to manufacture a silicone composition. This composition was a uniform paste which had a viscosity of 65,000 cp and was smooth to the touch.

[0064] (Reference Example 10)

100 g organohydrodiene polysiloxane expressed by the average compositional formula (13)

[0065]

[Formula 13]



[0066]

160 g ethanol, 34.7 g of the polyoxyalkylene expressed by the average compositional formula $CH_2=CHCH_2O(C_2H_4O)_{30}-(C_3H_6O)_{10}-CH_2CH=CH_2$ (14), 20 g ethylene glycol, 13.7 g dimethyl polysiloxane with a viscosity of 10 cs at 25°C, and 0.3 g of an ethanol solution containing 3 wt % chloroplatinic acid were introduced into a reactor and treated in the same manner as in Reference Example 5 to manufacture a polymer.

[0067]

100 weight parts of this polymer and 300 weight parts decamethyl cyclopentasiloxane were then dispersed, mixed, then thoroughly kneaded under shearing force using a three roll mill, and allowed to swell to manufacture a silicone composition. This was a uniform paste composition which had a viscosity of 52,000 cp and was smooth to the touch.

[0068] (Practical Example 1)

Solid Foundation

(Recipe)	(wt %)
(1) Ophiopogon stearic acid ester	7
(2) glyceryl trioctanoate	13
(3) paste silicone composition	
(Reference Example 4)	15
(4) dimethyl polysiloxane (6 cs)	5
(5) carboxyvinyl polymer	0.4
(6) sodium hydroxide	0.08
(7) purified water	39.52
(8) 1,3-butylene glycol	4
(9) titanium oxide	10
(10) inorganic pigment	2.5
(11) mica	3
(12) lecithin	0.3
(13) perfume	0.1
(14) antiseptic	0.1

(Manufacturing Method)

- A. Components (1) and (2) were mixed and thermally dissolved.
- B. Components (5) through (8) were mixed and dissolved.
- C. Components (9) through (13) were uniformly mixed and pulverized.
- D. Components (3) and (4) were mixed, the components prepared in step B were then added to bring about emulsification, the components prepared in steps A and

C were then added and uniformly blended, the ingredients were thermally dissolved and then allowed to flow into a container where they were molded to yield a foundation in the form of a solid.

[0069] (Practical Example 2)

Foundation in the form of a cream:

A foundation in the form of a cream having the composition shown in Table 1 was prepared by the following manufacturing method, and its stability and application were assessed. The results are shown in Table 1.

(Manufacturing method)

- A. Components (1) through (3) were mixed and thermally dissolved.
- B. Components (7) through (10) and (16) were mixed and dissolved.
- C. Components (11) through (15) were uniformly blended and pulverized.
- D. Components (4) through (6) were mixed, and the components prepared in step B were then added to bring about emulsification.
- E. The components prepared in steps C and D were added to those prepared in step A and made uniform to yield a foundation in the form of a cream.

[0070]

[Table 1]

Recipe	Practical Example 2	Comparative Examples		
		1	2	3
(1) starch fatty acid ester	2	—	2	4
(2) sucrose fatty acid ester	2	—	2	5
(3) glyceryl trioctanoate	6	10	6	21
(4) paste silicone composition (Reference Example 5)	6	6	—	—
(5) silicone gel composition* ¹	—	—	6	10
(6) dimethyl polysiloxane (6 cs)	9	9	9	25
(7) carboxyvinyl polymer	0.6	0.6	0.6	0.2
(8) sodium hydroxide	0.12	0.12	0.12	0.04
(9) purified water	59.28	59.28	59.28	19.76
(10) 1,3-butylene glycol	5	5	5	5
(11) titanium oxide	7	7	7	7
(12) inorganic pigment	1.8	1.8	1.8	1.8
(13) mica	0.8	0.8	0.8	0.8
(14) lecithin	0.2	0.2	0.2	0.2
(15) perfume	0.1	0.1	0.1	0.1
(16) antiseptic	0.1	0.1	0.1	0.1
Stability* ²	O	Δ	*	O
Application* ³	O	O	—	Δ

[0071]

*1: Synthesis of silicone gel composition

1790 g dimethyl methyl hydrodiene polysiloxane hindered at the ends with trimethyl silyl (average molecular weight 2340, Si-H 4.5 mol %) and 710 g dimethyl polysiloxane hindered at the ends with dimethyl vinyl silyl (average molecular weight 930, vinyl groups 7.7 mol %) were introduced into a planetary mixer having an internal volume of approximately 5 L where they were agitated and mixed. 0.5 g isopropanol solution containing 2% chloroplatinic acid was added to the above mixed solution, the contents were heated to 70 to 80°C, and the agitation was continued for two hours. The system pressure was subsequently reduced to 5 to 10 mmHg, and 30 minutes of continuous stripping resulted in a partially crosslinked organopolysiloxane polymer in the form of a colorless flexible solid. 100 weight parts dimethyl polysiloxane with a viscosity of 6 cs at 25°C was then dispersed and mixed in

100 weight parts of the resulting organopolysiloxane, thoroughly kneaded, and allowed to swell to manufacture the silicone gel composition.

***2: Stability**

O: good, with no change in state

Δ: slight separation

*: pronounced separation

***3: Application**

O: cool, refreshing sensation

Δ: refreshing, but not cool

*: oily and not refreshing

[0072]

It is apparent from the results shown in Table 1 that the cream foundation of Practical Example 2 was extremely stable despite the high water content and that it had an unprecedented cool and refreshing application. In contrast, the product obtained in Comparative Example 1 with no oil gelling agent blended in had poor stability. The use of a partially crosslinked organopolysiloxane polymer instead of the silicone polymer pertaining to the present invention resulted in good stability in cases involving a low moisture content (Comparative Example 3) as well as a relatively refreshing feel with no stickiness or oily feel but did not result in a cool, refreshing feel as in the present invention. Increases in moisture content (Comparative Example 2) resulted in poor stability and did not withstand use.